

NICKEL-BASE SUPERALLOY HAVING AN OPTIMIZED PLATINUM-ALUMINIDE COATING

ABSTRACT OF THE DISCLOSURE

5 A nickel-base superalloy substrate includes a surface region having an integrated aluminum content of from about 18 to about 24 percent by weight and an integrated platinum content of from about 18 to about 45 percent by weight, with the balance components of the substrate. The substrate is preferably a single-crystal advanced superalloy selected for use at high temperatures. The substrate may optionally have a ceramic layer deposited over the platinum-aluminide region, to produce a thermal barrier coating system. The platinum-aluminide region is produced by diffusing platinum into the substrate surface, and thereafter diffusing aluminum into the substrate surface.